

CENTRE FOR WORKFORCE INTELLIGENCE

Trauma and Orthopaedic Surgery

This summary sheet contains recommendations informed by the facts collated by the CfWI in close collaboration with specialty stakeholders. The references in this summary sheet refer to the reference section at the end of the fact sheet for this specialty, available at <u>http://www.cfwi.org.uk/</u>.

Specialty group: Specialty:	Surgery Trauma and Orthopaedic Surgery
RECOMMENDATION	The CfWI recommends a sustained reduction of 30 NTNs phased over the next three years. This could be done by reducing ten posts a year over the next three years.
	This will need to be reflected within CST posts to reduce the risk of mismatches between CT2 graduates and ST3 posts.
	Not all SHAs will need to reduce numbers (for example East Midlands and East of England), based on weighted capitation alone, NHS London is identified for greater reductions.
	A further review is recommended for 2013.

Introduction

The purpose of this document is to make recommendation to inform planning for future medical training numbers in Trauma and Orthopaedic (T&O) Surgery in England over the next three years. When formulating these recommendations, we considered factors such as demographics, lifestyle issues and the views of key stakeholders.

The policies and initiatives affecting T&O Surgery include:

- the cessation of 18-week waiting targets 2011
- regional trauma networks 2011
- Improving Outcomes: A Strategy for Cancer 2011
- the Working Time Directive 2008
- the Musculoskeletal Service Framework 2006
- Independent Public Service Pensions Commission: Final Report 2011.

The CfWI research and engagement with the specialty identified the following issues:

- a population that is ageing, with higher rates of obesity and a greater numbers of comorbidities
- the increasing complexity and sub-specialisation of T&O Surgery
- the high competition ratios for surgical specialty entry at ST3 the Medical Programme Board are attempting to improve likelihood of career progression at ST3.

The demand for T&O Surgery is expected to increase if the trend observed in Hospital Episodes Statistics inpatient activity continues (see Figure 3a of the Trauma and Orthopaedics factsheet).

The British Orthopaedic Association (BOA) is currently working to give new predicted estimates of future demand based on need for T&O Surgery. Their analysis is expected to be completed by the autumn of 2011.

When considering adjusting the supply of T&O surgeons to match demand, participation rates of the workforce need to be considered. These have flatlined from 2005 to 2010 at 96 per cent. If participation rates fall, with more part-time working, a greater number of T&O surgeons will need to be trained and employed to maintain full-time equivalent (FTE) levels.

T&O Surgery has significant interactions with the other surgical specialties, anaesthetists and ICM, Emergency Medicine, theatre teams and surgical ward staffing. T&O Surgery workforce planning needs to consider the cross-specialty and cross-profession impacts that may occur.

Key findings

The most recent data from the IC census (NHS IC, 2011a) records a headcount of 1,973 (1,896 FTE) T&O consultants employed in England on 30 September 2010.

BOA view	The historical view of the BOA had been for a recommendation of 1 FTE per 25,000 population (Royal College of Surgeons of England (RCSEng) 2005), which had been revised in 2010 to 1 FTE per 15,000 population, with an interim aim of 1:20,000 (RCSEng 2010), by 2020.
	The BOA is moving away from a per capita target and instead looks to take account of the estimated needs of the UK population. Its new work on this will be completed by the autumn of 2011.

Figure 1, based on data from the NHS Information Centre (IC) census, shows that the FTE consultant workforce has expanded by 23 per cent during the past five years.

If the demand is modelled from a baseline of the consultant supply in 2010 and increases at the rate of population growth, it will increase to about 2,023 FTE in 2020 and constantly remain below the level of supply predicted for the consultant workforce. The supply of general surgery consultants over the next ten years is forecast to increase to 2,771 FTE in 2020 (approximately 2,896 headcount), an average increase of 4.6 per cent annually.

Weighted capitation suggests that, out of the ten SHAs, the North East and London SHAs are over-capitated for both consultants and junior doctors. The East Midlands, West Midlands and East of England are under-capitated. London currently accounts for 24 per cent of doctors in training, approximately 92 FTE higher than if weighted capitation was used alone. For more information on weighted capitation, see the fact sheet. The CfWI position on training numbers is that while weighted capitation has some use, decision makers also need to consider the quality of training in the regions and the accessibility of care for patients.

Figure 1: Cumulative historical workforce supply (FTE) and future consultant supply & estimation of the number of future filled posts for service delivery - Trauma and Orthopaedic Surgery (T&O)



Cumulative historical workforce supply (FTE) and future consultant supply & estimation of the number of future filled posts for service

Source: Historical supply data is taken from the NHS Information Centre census 30th September 1997 to 2010. Supply forecasts are based on ESR data from November 2010, deanery monitoring data 2009 and workforce assumptions. Estimates of demand use ONS population projections (2010a) and BOA estimated demands (2010).

Recommendations

The numerical evidence of the workforce, those in training, specialty activity reporting and demographic profiling is of high quality. The workforce supply modelling assumptions have been confirmed by the BOA. With this in mind, the CfWI is confident of collating both highquality data and assumptions to inform our modelling.

T&O Surgery is a large specialty representing approximately one third of England's entire surgical workforce, according to the NHS Information Centre 2010 census. The CfWI modelling indicates that the T&O Surgery workforce is forecast to grow significantly over the medium term. Whilst the BOA is undergoing analysis of future T&O Surgery needs, the CfWI will continue using the BOA per capita ratios in its modelling. With an average increase in growth of 4.6 per cent, the estimated demand for T&O surgeons on a 1 FTE: 25,000 population ratio is expected to be exceeded in the next two years. This is expected to be matched by 2020 for 1:20,000 population, and the 1:15,000 population ratio is not expected to be matched within ten years.

The upcoming growth in T&O Surgery Certificate of Completion of Training (CCT) holders and potential slower growth in substantive positions suggests a future oversupply of CCT holders. Therefore, being careful to avoid a 'boom or bust' cycle, whilst acknowledging the need for service delivery, the CfWI recommends that training in T&O Surgery is adjusted accordingly, with a reduction from around 150 recycled NTNs per year to around 120 in the next 3 years.

Weighted capitation, along with other factors such as the quality of training in the regions and the accessibility of care for patients, can be helpful when making decisions about the geographical distributions of posts. If weighted capitation was the only factor considered in changing training posts then the North East, London and South Central SHAs would be seen as over-capitated for both consultants and junior doctors, i.e. they have a greater proportion of England's doctors than if provision were to follow weighted capitation. Inversely North West, Yorkshire and the Humber, East Midlands and East of England are seen as under-capitated.

It is important to note that there are risks to any workforce planning recommendations. The evidence available does not take account of changes to future service delivery models or the impact of productivity and new ways of working, which are likely to impact on the future consultant workforce. Following discussions with the RCSEng and the BOA representatives, the CfWI acknowledges that ongoing pharmacological and diagnostic developments have and are expected to continue to affect which surgical procedures are performed. The extent of this effect is unknown, and workforce planners need to be kept informed to reduce the risk of over- and undersupply.

Regarding the specific recommendations in this report, the CfWI acknowledges that the pace of change needs to be planned for and appropriately managed. A reduction planned over three years may be expected to affect Working Time Directive compliance and rotas if all other relevant variables remain unchanged. Therefore, the CfWI recommends an equally stepped 10-post reduction to encourage a smoother transition period.

Every effort should be made to utilise the newly qualified CCT holders to provide better patient care, this is more important when considering the service reconfigurations that may be required to take account of this reduction in trainees.

The CfWI recommends continuing engagement with the specialty and employers to develop and revise its understanding of workforce issues affecting the specialty. A further review is recommended for 2013.



MEDICAL SPECIALTY WORKFORCE FACT SHEET

TRAUMA AND ORTHOPAEDIC SURGERY



This fact sheet considers the factors influencing the future demand of the specialty (section 1) and the current and forecast workforce supply (section 2). This information forms part of the body of evidence used to advise recommendations on future medical training numbers. Conclusions and recommendations are in the accompanying summary sheet. The Centre for Workforce Intelligence (CfWI) welcomes contributions to both the content and interpretations of this information. This fact sheet covers the following:

Section 1 – Considerations for future demand

Current training route Specialty viewpoints Policy drivers Demographics Health and lifestyle Changes in practice Changes in activity

Section 2 – Current and forecast supply

Existing workforce Recruitment Consultant projections Related healthcare workforce



CONSIDERATIONS FOR FUTURE DEMAND

Current training route

Higher specialty training in Trauma & Orthopaedic (T&O) Surgery commences at ST3, after the trainee has successfully completed Core Surgical Training (CST).

Specialty viewpoints¹

Trauma and Orthopaedic Surgery is a large surgical specialty, approximately one third of the entire surgical workforce according to the NHS Information Centre (IC) census 2010 (NHS IC, 2011a). According to the CfWI modelling the Trauma and Orthopaedic workforce is forecast to grow significantly over the medium term while the demand for trauma and orthopaedic surgeons is estimated to be overtaken by the supply in the next five to ten years.

The Royal College of Surgeons of England (RCSEng, 2005) report 'Developing a Modern Surgical Workforce' recommended a ratio of one full-time equivalent (FTE) consultant per 25,000 population, a figure which was originally derived from the Dowie Reports (Dowie, 1992) on *Patterns of Hospital Medical Staffing* in 1991, published in the British Journal of Surgery. In the RCSEng 2010 *Surgical Workforce Report* (RCSEng, 2010a), the British Orthopaedic Association (BOA) recommendation had been amended to one FTE per 15,000 population for 2020 with an interim target of one FTE per 20,000 for 2015.

¹ The CfWI conducted a series of stakeholder engagement meetings with representatives from each specialty. This report will use the term specialty representative to credit information presented during these meetings. Although in some cases the source is not explicitly named, this information is available on a case by case basis. Please contact the CfWI if more information is required.



The recommendation and view of the BOA is, however, changing as there is recognition that the financial and service provision environment is altering. The current BOA view has moved away from a figure-based on a per capita ratio, and instead takes account of the estimated trauma and orthopaedic needs of the UK population. This is fitted into a realistic model of growth, so that training and careers are not wasted through an over-production of surgeons who are unlikely to enjoy certainty of employment and a career over the next two decades. The BOA analysis of future needs is expected to be completed by the autumn of 2011 (Bowyer, 2011).

Based on subnational population projections by the Office for National Statistics (ONS) for 2010 (ONS, 2010a), this gives an estimated demand of 2,040 FTE trained specialists for England for the 2005 report and 3,400 FTE for the 2010 report. The Information Centre Census (NHS IC, 2011a) reports that there were 1,973 HC (1,896 FTE) Trauma and Orthopaedic consultants employed in England in 2010. The CfWI model estimates that the 2005 1:25,000 recommendation will be met in 2013 and the 2010 1:20,000 recommendation shortly after 2020. The CfWI model does not predict the 1:15,000 recommendation will be met before 2020. The gender split for December 2009 was 96 per cent male and 4 per cent female (Electronic Staff Records (ESR), 2010).

Following discussions with the RCSEng and the Specialty Advisory Committee (SAC) representatives, the CfWI acknowledges ongoing pharmacological and diagnostic developments have and are expected to continue to affect which surgical procedures are performed. This effect is unknown and workforce planning cycles need to be kept informed to reduce the risk of over and undersupply.

Policy drivers

18 week waiting targets

Performance management of the 18 weeks waiting times target by the Department of Health has ceased. Although formal 18 week waiting targets are no longer in place, referral to treatment data will continue to be published and monitored and standards are hoped to be maintained. As such, there is still significant pressure on consultants in T&O surgery to keep waiting times low.

According to the Department of Health (DH), for T&O surgery in January 2009, 86 per cent of patient pathways were compliant. In January 2010 this was 87 per cent and in January 2011 this was 81 per cent (DH, 2010b). While it is difficult to identify if these changes were due to changes in numbers of patients and procedures or changing ways of working, they do provide insight into changes to service delivery.

Improving Outcomes: A Strategy for Cancer 2011

The Department of Health 2011 report (DH, 2011a) into improving outcomes for incidents of cancer encourages an improvement of access to high-quality surgery. According to the report, advances in surgical techniques and centralisation of complex surgery have meant that the quality of cancer surgery has improved. More operations are being carried out by specialist surgeons with expertise in particular procedures, resulting in better outcomes, less invasive procedures and shorter recovery times.

Operation types

Regular engagement with the specialty representatives has disclosed and confirmed that since the 1990s there has been a rise in the complexity and subspecialisation of T&O surgery.

Working Time Directive (WTD)

The WTD limits the number of hours junior doctors can work in a week to 48 (DH, 2009a). Regular engagement with the specialty representatives has revealed ongoing concerns about using trainees to meet the demand and the subsequent decrease in elective surgical time spent as a result of shift working.

Musculoskeletal Service Framework (DH, 2006)

The Musculoskeletal Service Framework (MSF) 2006 Review recognises the increasing demand for services: It is estimated that up to 30 per cent of all GP consultations are about musculoskeletal complaints. The ageing population will further increase the demand for treatment of age-related disorders such as osteoarthritis and osteoporosis. The MSF shows scope of using different skills mixes with some work being addressed by other professions (e.g. physiotherapists).

Regional Trauma Networks

Major trauma patients present with multiple, serious injuries that could result in disability or death. It is a serious public health issue, representing the leading cause of death in people aged under 45. Despite this, major trauma represents a very small proportion of hospital emergency department work – around 0.2 percent (National Audit Office (NAO), 2010). Major trauma patients often have multiple injuries which need to be treated by multiple specialties, not all of which are commonly available in hospitals. This means patients do not always receive appropriate care within a reasonable timeframe.

Regionalisation of trauma care in England around specialised centres has been proposed as a solution to this problem by a number of studies over the past 20 years. The National Confidential Enquiry into Patient Outcome and Death (NCEPOD) survey and report *Trauma: Who Cares?* (NCEPOD, 2007) comprehensively built a case for regionalisation, providing the NHS with the impetus to commit to developing Regional Trauma Networks (RTNs) across England, a programme backed by the NAO (2010). In RTNs hospitals and the ambulance service act in concert to enable access to specialist care night and day, delivering patients to the hospitals best able to treat them.

Some trauma networks have already been established in England, most notably in London. It is anticipated other RTNs will be in place by the end of 2011, a commitment reiterated in the *Revision to the Operating Framework for the NHS in England 2010/11* (Department of Health, 2010a). The necessary service reconfigurations will be commissioned by strategic health authorities (SHAs) ahead of the structural changes described in *Equity and Excellence: liberating the NHS* (Department of Health, 2010c).

The "Regional Trauma Networks - NHS Clinical Advisory Group on Major Trauma Workforce" 2011 NHS Clinical Advisory Group (NHS CAG) and CfWI report (CfWI and NHS CAG, 2011) concludes "the requirement for 24/7 availability of consultant-level staff on site within 30 minutes in Orthopaedic surgery may cause some issues, although this provision should be attainable through the active management of current contracts". This highlights the need for planning of both trauma workloads alongside the more predictable elective surgical procedures.

Demographics

Figure 1: HES FCE data for trauma and orthopaedics by patient age group



Source: (NHS IC, 2011b)

According to Information Centre Hospital Episode Statistics (HES) the numbers of finished consultant episodes (FCEs) (NHS IC, 2011c) and admissions (NHS IC, 2011d) from 2005/6 to 2009/10 have both increased by 19 per cent, with a decrease in mean waiting times of 44 per cent from 131 days to 73 days. In this time the number of patients aged over 60 has increased by 26 per cent while the number of patients under 60 years of age has increased by 15 per cent. These figures support the view that the T&O service workload has increased and the ageing population will be expected to continue this trend.



The charts in Figure 2 display the population age distribution for England for 2011 and 2031 according to Office for National Statistics (ONS) forecasts for both males (left chart) and females (right chart). Hospital Episode Statistics (HES) data for inpatient FCEs (NHS IC, 2011c) were analysed to identify the age range(s) which appear to use the specialty the most. The shaded bars show the subgroups of the population which are more dependent on the specialty. The darkest shaded bars represent those that fall in the upper quartile (the top 25 per cent) of the most dependent parts of the population, when compared with the equivalent age bands of the overall population. The unshaded bars indicate the population percentage for that age group in 2031.

Figure 2 indicates that, based on FCE data, males aged 60 and over (except the range 80-84) and females aged 65 and over are the patients who use the service provided by T&O the most. Additionally the data suggests that the rest of the population also use the service but to a lesser degree.

Figure 2 also indicates that the population in all age bands from 65 upwards is predicted to grow over the next 20 years. This is likely to have a disproportionate effect on the demand for T&O in comparison with other specialties.



Figure 2: 2031 population estimate and indication of age and gender of the 2011 population using T&O Surgery



Source: HES Data provides the specialty specific age range that is applicable to the population using T&O Surgery (NHS IC, 2011c). Population statistics updated July 2008 (ONS, 2010a).

Health and Lifestyle

Lifestyle Influences

Regular engagement with the specialty representatives has indicated the demand on T&O surgery is often driven by:

- increased proportion of people being overweight and obese
- drug & alcohol misuse
- road traffic accidents
- incidents at the workplace
- sports injuries.

Trends in selected lifestyle behaviours can be indicators of possible future demand for T&O Surgery.

Obesity

The National Heart Forum (2010) estimates that by 2020 as many as eight out of ten men and almost seven in ten women will be overweight. Studies undertaken by Department of Orthopaedics, Malmo University Hospital Sweden (Bergkvist et al, 2009) have demonstrated significant correlation between obesity and common orthopaedic conditions.

Polypharmacy and ageing population

Due to progressive lengthening of life expectancy, elderly patients undergoing operations have an increasing number of comorbid diseases and an increased number of complications associated with age and comorbidities. The Office for National Statistics (ONS, 2010b) predicts that by 2034, 23 per cent of population will be aged 65 and over compared to 18 per cent aged under 16, and the number aged over 85 will have more than doubled, to 5 per cent of the population. According to Kennedy et al. (1998) at least 44 per cent of patients have been taking medications unrelated to the problem requiring surgery on admission to hospital. They conclude that the risk of developing a postoperative clinical complication in the patients already taking medicines was 100 per cent higher than for their drug-free counterparts. Oboh (2006) indicates that approximately 75 per cent of people aged 75 and over take at least one prescribed medicine, while about one in ten older people take four or more different medicines regularly. It is anticipated that the number of people taking multiple medications will increase.

Drugs & Alcohol misuse

Findings included in 'Drug Misuse Declared: Findings from the 2008/09 British Crime Survey' (Home Office, 2010) show the following:

- The overall level of any illicit drug use in 2008–09 remained stable (9.6 per cent in 2007–2008 compared with 10.1 per cent in 2008–2009) but there was an increase in last year Class A drug use (from 3.0 to 3.7 per cent).
- For individual types of drug, increases were seen in 2008–09 use of cocaine powder, ecstasy, tranquillisers, anabolic steroids and ketamine.

The RCSEng (2010b) recommends that doctors, nurses and surgeons working in trauma services provide advice to patients about alcohol misuse, as this has been shown to reduce patients' drinking to safer levels a year later by 24 per cent.

If 24 per cent of patients reduce their drinking to safer levels, alcohol related injuries may be expected to reduce. This would have to be offset against the increased time spent by healthcare staff in speaking with patients about their alcohol intake, when calculating the change in service level overall. For the first year, more time would be taken with the benefits coming later.

According to the report '*Health profile of England 2009*' (DH, 2010d) the percentage of alcohol-related harm was higher in 2008–2009 than in 2002–2003 by 70 per cent and there were 1,583 hospital admissions per 100,000 population. The National Audit Office (NAO, 2008) reports that more than 10 million people (31 per cent of men and 20 per cent of women) are now regularly drinking above the guidelines set by Government. The importance of tackling this problem has been included particularly in the *Choosing Health White Paper* (DH, 2004) and in Lord Darzi's review of the future of the NHS, '*High Quality Care for All'* (June 2008).

Road Traffic Accidents

The Department for Transport (DFT, 2009) reports that although, in 2008:

• overall traffic accidents rose by approximately 16 per cent compared with 1994–98 average baseline

- the number of reported killed or seriously injured casualties was 40 per cent lower
- the number of children killed or seriously injured was 59 per cent lower, and
- the slight casualty rate was 36 per cent lower.

It can be assumed that there if there is an increasing number of road traffic accidents this will mean a corresponding increase in related injuries.

Work-related Accidents

The Labour Force Survey (LFS) for 2009, as reported by the Health and Safety Executive (HSE, 2009), report that in 2008–2009, 246,000 reportable injuries occurred, at a rate of 870 reportable injuries per 100,000 workers.

Sports Injuries

Regular engagement with the specialty representatives has noted that the expected incidence of sports injuries is part of the varied workload that a T&O surgeon is expected to service.

Changes in practice

Orthopaedic services in the community

There have been developments in providing more care in the community e.g. the Community Orthopaedic Project in Essex (COPE, 2011) a specialist multi-disciplinary team supporting the early discharge of orthopaedic patients for rehabilitation in the community. This could affect the path a patient takes to seeing a T&O surgeon and the filtering out of inappropriate consultations.

Rehabilitation of major trauma patients

The Department of Health report Rehabilitation of Major Trauma Patients (2009b) proposed a restructuring of trauma care into regionally organised trauma networks, incorporating the specialised trauma hospitals, local trauma units and rehabilitation services (hospital and community). Early and intensive rehabilitation is encouraged to aid speed of recovery (DH, 2009b).

Spinal surgery

CfWI recognises that Spinal surgery activity is undertaken in both the T&O and Neurosurgery specialties. In order to address current demand, the Spinal Taskforce for the Department of Health (March 2010e) report recommends that a lead centre or centres are set up for the provision of specialist spinal surgery to the local population (DH, 2010e). The report calls for all hospitals receiving trauma to have on site expertise in the assessment and management of acute spinal conditions both in the emergency department and on the inpatient ward. The Spinal Taskforce also asks for consideration of issues around training and education and how clinicians can best share training and education, audit and governance between primary and secondary care across the pathway and across organisations.

Changes in activity

Finished Consultant Episodes

Figure 3a shows the FCE data for Trauma and Orthopaedic Surgery from 1998 to 2009 (NHS IC, 2011c).

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Figure 3a: Finished Consultant Episodes (FCEs) per year for T&O Surgery



It is assumed that the recording and definition of FCEs in this specialty has not changed significantly over this time period, and therefore the rise in FCEs from 1998 onwards indicates an increase in activity in the specialty. The reported average yearly increase in this period was 4 per cent.

Engagement with BOA confirmed T&O surgery is heavily engaged with other surgical specialties with some overlap, while also bringing a unique skill set. This may mean some T&O FCEs being attributed to other specialties and vice versa.

Source: (NHS IC, 2011c). The data shows annual number of FCEs. FCEs were recorded in the tax year in which they finished, the date on the graph indicates the starting year for each tax year.

T&O admissions

Figure 3b: Admissions per year for Trauma and Orthopaedic Surgery



Admissions of trauma & orthopaedics patients

It is assumed that the recording and definition of admissions in this specialty has not changed significantly over this time period, and therefore the rise in admissions from 2005/6 to 2009/10 onwards indicates an increase in activity in the specialty. The reported average yearly increase in this period for total admissions was 4.8 per cent while emergency admissions fell on average by 0.7 per cent.

In 2009/10 emergency admissions accounted for 28 per cent of total admissions for T&O surgery.

Source: (NHS IC, 2011d)

Finished Consultant Episodes (FCEs) bed days

Figure 3c: FCE Bed days for Trauma and Orthopaedic Surgery



FCE bed days trauma & orthopaedics patients

It is assumed that the recording and definition of FCE bed days in these specialities have not changed significantly over this time period, and therefore the slight fall in FCE bed days from 2005–6 to 2009–10 onwards indicates a fall in bed days.

For T&O surgery the reported average yearly decrease in this period for FCE bed days was 1.8 per cent.

Source: (NHS IC, 2011d).

Outpatient Attendances

Figure 3d shows the trend in outpatient attendance from 2003–2009 (NHS IC, 2011e).

Figure 3d: All outpatient attendances per year for Trauma and Orthopaedic Surgery



It is assumed that the recording and definition of outpatient attendances in this specialty have not changed significantly over this time period, and therefore the rise in outpatient attendances from 1998 onwards indicates an increase in activity in the specialty. The reported average yearly increase in this period was 6 per cent, a similar trend as the FCEs illustrated in figure 3a.

Source: (NHS IC, 2011e). OAs were recorded in the tax year in which they occurred, the date on the graph indicates the starting year for each tax year.

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CURRENT AND FORECAST SUPPLY

Existing workforce

Supply and age profile

Figures 4: Workforce supply by Gender – Trauma and Orthopaedic Surgery



Workforce supply by Gender

Figure 4 shows in 2009 females made up 4 per cent of the number of consultants employed. In a relatively short space of time from 2006 to 2009 the female consultant numbers increased from 56 to 76, a 36 per cent increase, while for male consultants this was 1,654 to 1,796, a 9 per cent increase. According to the BOA 2009 survey of the UK nations 95 of the 2264 consultants were female (4 per cent). For 2009 the IC census showed the male participation rate was marginally higher than female, 96 per cent compared to 95 per cent. This may be indicative that an increasing female participation of the workforce does not necessarily reduce overall participation rates.

Source: (NHS IC, 2011f)

Data extracted via iView from the Electronic Staff Record (ESR) in December 2010 records 1,973 (1,896 FTE) consultants (ESR, 2010).

The age profile from both the information centre at September 2010 and the BOA 2009 census (BOA 2009) of the consultant workforce is shown in Figure 5a and b.

Figures 5a and b: (a) age profile (FTE) and, (b) age profile (Headcount) – Trauma and Orthopaedic Surgery consultants



Source: (NHS IC, 2011g) and (BOA, 2009).

The chart shows a strong supply of younger staff and only a small proportion of staff working beyond typical retirement age – this does not suggest an impending retirement bulge. The BOA and iView consultant workforce numbers closely align, with slight differences that may be a reflection of many factors, including the times when data was collected and different reporting methodologies. Additionally, the BOA data is for the UK whereas the IC data is for England only.

The BOA 2009 census reports the average retirement age as 62 years (BOA, 2009). According to the RCSEng 2010 Surgical Workforce Report 7 per cent of consultant T&O surgeons have an intention to retire in the next two years (RCSEng, 2010a). This could be disproportionately expected to affect Trusts with fewer consultants more than larger Trusts with greater numbers.

Vacancies and locum staff

The IC Vacancy Survey (NHS IC, 2011h) records that the three-month vacancy rate for all surgical consultants is 1 per cent as of March 2010. The three-month vacancy rate for trauma and orthopaedic surgery consultants is marginally higher at 1.1 per cent with 20 vacancies. According to the BOA 2009 survey of BMJ advertisements (BOA 2009) there were 222 consultant vacancies for 2009. The differences can be explained since the data collections have different methodologies and are collected at different points in time.

Data extracted via iView from ESR in December 2010 records that of the practising consultant workforce 3 per cent are locums being 65 out of a total of 2,000 consultants (ESR, 2010).

Geographical distribution

Tables 2a and 2b below show the geographical distribution of doctors and trainees in absolute values and in relation to the weighted capitation of each Strategic Health Authority (SHA) (a definition of weighted capitation is given below*).

* The Department of Health uses a weighted capitation formula (WCAP) to distribute resources to primary care trusts (PCTs) based on the relative health needs of each PCT's catchment area. If qualified doctors and trainees were equitably distributed according to the formula, all other columns in Table 2b would be zero. Values greater than zero indicate that the SHA has more doctors than would be included by WCAP; values less than zero indicate that the SHA has fewer doctors than would be included by WCAP. However, the CfWI recognises that weighted capitation does not reflect that specialist services are not equally distributed throughout England. It is also important that all training posts are of high quality, and high-quality training placements may not be equally available across England (DH, 2011b).

Tables 2a and b:, a) Actual number of doctors by grade and SHA, across ten SHAs for T&O Surgery, b) Number of FTE above or below that recommended by weighted capitation alone

	Number of doctors (FTE) by grade and SHA, shown for T&O Surgery - Based on IC census data for 2010 and deanery monitoring data for 2009			Number of doctors (FTE) over or under the number recommended by weighted capitation alone			
		Table (a)			Table (b)		
SHA	Weighted Capitation	Doctors in training	SSASG	Consultant	Doctors in training	SSASG	Consultant
North East	5.56%	65	39	116	8	4	6
North West	14.26%	131	93	271	-16	1	-14
Yorkshire & The Humber	10.58%	88	65	189	-16	0	-13
East Midlands	8.75%	61	43	158	-23	-9	-4
West Midlands	10.98%	105	98	232	-2	31	23
East of England	11.01%	74	62	182	-27	-1	-14
London	12.77%	231	58	268	92	-29	-2
South East Coast	8.27%	43	43	149	-32	-4	3
South Central	7.27%	86	26	132	19	-15	3
South West	10.55%	93	82	201	-5	21	12
Total	100.00%	976	609	1,896			

Source: Weighted capitation (DH, 2011b), Consultant/SSASG numbers (NHS IC, 2011a) and deanery monitoring (NHS IC, 2009). Note due to rounding sum of data may not match presented totals

Tables 2a and b suggest that, out of the ten SHAs, the NHS North East and South Central are seen as over-capitated for both consultants and junior doctors, i.e. they have a greater proportion of England's doctors than if provision were to follow weighted capitation.

Recruitment

Table 3: 2010 Specialty Recruitment for T&O Surgery at ST3

Deanery	Available Posts	Accepted Posts	Fill Rate
East Midlands	6	6	100%
East of England	7	6	86%
Kent, Surrey and Sussex	0	0	-
London	31	40	129%
Mersey	0	0	-
North West	8	8	100%
Northern	17	11	65%
Oxford	3	0	0%
Peninsula	3	3	100%
Severn	6	6	100%
West Midlands	9	3	33%
Wessex	4	4	100%
Yorkshire and the Humber	8	7	88%
Total	102	94	92% (avg)

According to the data returned to the DH as part of their monitoring of T&O recruitment in 2010 (DH, 2010f) there is an uneven distribution geographically with an overall 92 per cent fill rate. London is the only deanery with accepted posts being greater than available posts. It is important to note KSS and London deaneries are often interlinked and for surgical specialties, as are Peninsula and Severn.

The CfWI fully accept the RCS position regarding training numbers that while weighted capitation has some use, decision makers need to consider the quality of training in the regions and the accessibility of care for patients in deciding training numbers.

There has been recent research by Carr et al (2011) into competition and career progression in surgery from ST3. The competition ratio of applicants to ST3 posts for Trauma and Orthopaedic Surgery is 7:1, which is higher than the average competition ratio for all surgery ST3 posts of 6:1. Applicants with prior surgical experience are more likely to be offered ST3 posts than those who are applying from core training. The Medical Programme Board has challenged the surgical specialty advisory committees to describe how prior career progression may be considered in the selection processes for 2011, to improve the likelihood of core trainees entering ST3. There will be further assessment of the results of this later in 2011 (Carr et al 2011).

Source: (DH, 2010f) Note: London recruitment includes recruitment to London, London/KSS and

London/KSS/EoE

Consultant projections

The supply and forecast of doctors in T&O Surgeons is shown in Figures 6a and b. Historical data is taken from the NHS Information Centre (IC) Medical Census (NHS IC, 2011a).

The objective of the medical workforce configuration data in Figures 6a and b is to show historically how the service has been delivered in T&O, with a combination of consultants, staff, specialty and associate specialist grade (SSASG) doctors, and trainee doctors (who may be in training towards another specialty, but are providing service in T&O). The supply forecast of consultants will give an indication of progress towards a consultant delivered service.

The figures are based upon the latest data available (SSASG data dates back to 2005).

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Figures 6a: Cumulative historical workforce supply (FTE) and future consultant supply & estimation of the number of future filled posts for service delivery - Trauma and Orthopaedic Surgery (T&O)



The chart to the left show that the consultant workforce FTE has expanded by 23 per cent during the past five years based upon the Information Centre (IC) census. The supply of middle grade medical staff together with trainees (defined as specialty trainees (registrars and senior house officers (SHOs)) providing input into T&O has also increased in this time. This group makes up 63 per cent of the workforce.

The BOA estimated in 2010 that one FTE trained specialist in T&O was required per 25,000 population (RCSEng, 2010). If this level of demand does not change, the supply of consultants is expected to reach and then exceed the estimated demand in 2013, when the consultant FTE is expected to be about 2,180. Shortly after 2020, CfWI modelling indicates that the 1:20,000 population ratio will be reached.

The above numbers need to be considered in the context of the evolving BOA estimated demands, due for completion in late 2011 (Bowyer, 2011).

If demand is modelled on population growth from a baseline of the consultant supply in 2010 it will increase to about 2,048 FTE in 2020, and constantly remain below the level of forecast supply of the consultant workforce.

The supply of T&O consultants over the next ten years is forecast to increase to around 2,771 FTE in 2020 (approximately 2,900 headcount), an average increase of 5 per cent annually.

Figure 6b: Cumulative historical workforce supply (HC) and future consultant supply & estimation of the number of future filled posts for service delivery - Trauma and Orthopaedic Surgery (T&O)



Source: Historical Supply Data (NHS IC, 2011a), Supply forecast (ESR, 2010), (NHS IC, 2009) and workforce assumptions. Estimates of demand use population projections (ONS, 2010a) and RCSEng estimated demand (2010a).

The supply forecast is based on the following modelling assumptions:

• Total national training numbers (NTNs) in training are split evenly across the higher specialty training years, and NTNs are recycled upon trainees gaining a CCT. All recycled NTNs are assumed to be filled in the next application process.

• Every new CCT holder is assumed to start work as a consultant within the same year.

The only source of joiners to the consultant workforce is through the training system. The modelling of this route takes into account the age of trainees, length of training, likely delays and attrition.

• The only leavers modelled are permanent leavers from the consultant workforce e.g. retirements. A distribution of retirements is modelled which reflects the variation in age of retirement between consultants.

For T&O Surgery, the following additional assumptions have been applied:

- A higher specialty training pipeline of six years (ST3-ST8) after trainees complete core surgical training (CT1-CT2). Indicative training length taken from the specialty curriculum (BOA, 2010)
- No reductions or expansions of ST3 posts for 2011 recruitment and onwards have been accounted for. This includes the 5 and 6 centrally funded ad-persona expansion posts implemented in 2007 and 2008
- Average delays in training of approximately zero years *
- Training attrition of one per cent per year*
- Participation rates for each age band remain constant for the specialty until 2020, with an overall participation rate of 0.96 in the IC census for 2010. However, as the consultant age distribution changes by year, the overall participation rate may also vary by year. This is in contrast to the 2010 forecast (CfWI, 2010), in which the participation rate was assumed to decrease. Therefore the forecast FTE for 2020 is higher than the prediction made in 2010.
- A distribution of retirements with an average retirement age of 63 years*

*These assumptions were reached by analysing past trends, and engaging with the specialty in order to identify indications that trends may change in the future.

REFERENCES

Bergkvist D., Hekmat K., Svensson T., Dahlberg L. (2009) *Obesity in orthopaedic patients*: *Surgery for Obesity and related diseases*, Nov-Dec; 5(6): pp 670-2. Epub 2009 Jun 17.

British Orthopaedic Association (2009) *Manpower Census*. [online] Available at: http://www.boa.ac.uk/en/publications/orthopaedic-manpower-census/ [Accessed June 2011].

British Orthopaedic Association (2010) *Specialist Training in Trauma and Orthopaedics 2010*. [online] Available at: http://www.ocap.org.uk/DesktopModules/Documents/DocumentsView.aspx?tabID=0&ItemID=114984&MId=5053&wversion=Staging [Accessed June 2011].

Bowyer, G. (2011) CfWI DRAFT T&O Factsheet. [email] (Personal communication 19 May 2011).

Carr, A. S., Munsch, C., Buggle, S. & Hamilton, P. (2011) Core surgical training and progression into specialty surgical training: How do we get the balance right? *Annals of the Royal College of Surgeons of England. 93: 24 – 248.* [online] Available at: http://docserver.ingentaconnect.com/deliver/connect/rcse/14736357/v93n7/s12.pdf?expires=1311859691&id=63751581&titleid=6331&acc name=Guest+User&checksum=FB26ED57048FC5DAAF7911E5020997E0 [Accessed 28 July 2011].

Centre for Workforce Intelligence (2010) *Summary sheet – recommendation for Trauma and Orthopaedic Surgery training 2011*. [online] Available at: http://www.cfwi.org.uk/intelligence/cfwi-medical-summary-sheets [Accessed June 2011].

CfWI and NHS Clinical Advisory Group (2011) Regional Trauma Networks - NHS Clinical advisory Group on Major Trauma Workforce. 15 March.

Community Orthopaedic Project in Essex (2011) [online] Available at: http://www.bhrhospitals.nhs.uk/gp/servicesb.php?id=68 [Accessed June 2011]. Department for Transport (2009) *Road Safety Research and Statistics*. [online] Available at: http://www.dft.gov.uk/adobepdf/162469/221412/221549/227755/rrcgb2008articles.pdf [Accessed June 2011].

Department of Health (2004) *Choosing Health White Paper – Making healthier choices easier*. [online] Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4094550 [Accessed June 2011].

Department of Health (2006) *Musculoskeletal Service Framework*. [online] Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH 4138413 [Accessed June 2011].

Department of Health (2009a) *The European Working Time Directive - UK notification of Derogation for doctors in training*. [online] Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_093940 [Accessed April 2011].

Department of Health (2009b) *Rehabilitation of Major Trauma Patients*. [online] Available at: http://arms.evidence.nhs.uk/resources/qipp/29514/attachment [Accessed May 2011].

Department of Health (2010a) *Revision to the Operating Framework for the NHS in England 2010/11*. [online] Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_110107 [Accessed April 2011].

Department of Health (2010b) *18 Weeks Referral to Treatment Statistics*. [online] Available at: http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Performancedataandstatistics/18WeeksRe ferraltoTreatmentstatistics/index.htm [Accessed June 2011].

Department of Health (2010c) *Equity and Excellence: Liberating the NHS*, 12 July. London: The Stationery Office. [online] Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH 117353 [Accessed June 2011].

Department of Health (2010d) *Health profile of England 2009*. [online] Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH_114561 [Accessed June 2011].

Department of Health (2010e) *Spinal Taskforce for the Department of Health*. [online] Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_114528 [Accessed June 2011].

Department of Health (2010f) DH monitoring of recruitment, Oct 2010.

Department of Health (2011a) *Improving Outcomes: A Strategy for Cancer*. [online] Available at: http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_123394.pdf [Accessed June 2011].

Department of Health (2011b) Weighted capitation values are for 2011-12, published 8/03/11 on DH website.

Dowie, R. (1992) Patterns of hospital medical staffing, British Journal of Surgery. August 1992 (volume 79, Issue 8, pp. 849).

Electronic Staff Record (2010) Data Warehouse data extracted from NHS Information Centre's iView, December 2010.

Health & Safety Executive (2009) *Labour Force Survey 2009*. [online] Available at: http://www.hse.gov.uk/statistics/lfs/0809/hubresults.htm and http://www.statistics.gov.uk/statbase/Source.asp?vlnk=358 [Accessed June 2011].

Home Office (2010) *Drug Misuse Declared: Findings from the 2008/09 British Crime Survey.* [online] Available at: http://webarchive.nationalarchives.gov.uk/20110220105210/http://uk.sitestat.com/homeoffice/rds/s?rds.hosb1209pdf&ns_type=pdf&ns_url =%5bhttp://www.homeoffice.gov.uk/rds/pdfs09/hosb1209.pdf%5d [Accessed June 2011].

Kennedy, J.M. et al. (1998) *Polypharmacy in a general surgical unit and consequences of drug withdrawal*, British Journal of Clinical Pharmacology, 49(4), pp 353-62.

Lord Darzi (2008) *High Quality Care for All*, June 2008. [online] Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_085825 [Accessed June 2011]. NHS Information Centre (2009) *Deanery Monitoring Data* as at 31 March 2009. [online] Available at: http://www.cfwi.org.uk/resources/data/deanery-monitoring-2009 [Accessed June 2011].

NHS Information Centre (2011a) *Medical and Dental Staff Census* as at 30 September 2010. [online] Available at: http://www.ic.nhs.uk/webfiles/publications/010_Workforce/nhsstaff0010/Medical/Med_and_Den_Detailed_Results_Tables_2010.xls [Accessed June 2011].

NHS Information Centre (2011b) *Hospital Episode Statistics for England: Main HES FCE data by patient age group.* [online] Available at: http://www.hesonline.nhs.uk [Accessed June 2011].

NHS Information Centre (2011c) *Hospital Episode Statistics for England: Main specialty Finished Consultant Episodes for England 1998-2009.* [online] Available at: http://www.hesonline.nhs.uk [Accessed June 2011].

NHS Information Centre (2011d) *Hospital Episode Statistics for England: Main specialty Admissions for England, 2005/6 – 2009/10.* [online] Available at: http://www.hesonline.nhs.uk [Accessed June 2011].

NHS Information Centre (2011e) *Hospital Episode Statistics for England: Outpatient attendances (main specialty) 2003-2009.* [online] Available at: http://www.hesonline.nhs.uk [Accessed June 2011].

NHS Information Centre (2011f) *Medical Specialty by gender 2006–2009*. [online] Available at: http://www.ic.nhs.uk/statistics-and-data-collections/workforce [Accessed June 2011].

NHS Information Centre (2011g) *Workforce data, consultant headcount and Full Time Equivalent breakdown by age band* as of 30 September 2010. [online] Available at: https://iview.ic.nhs.uk/ [Accessed May 2011].

NHS Information Centre (2011h) *Vacancies Survey* March 2010. [online] Available at: http://www.ic.nhs.uk/statistics-and-data-collections/workforce/nhs-and-gp-vacancies/nhs-vacancies-survey-england-31-march-2010 [Accessed June 2011].

National Audit Office (2008) *DH Reducing Alcohol Harm: Health Services in England for Alcohol misuse*, Oct 2008. [online] Available at: http://www.nao.org.uk/publications/0708/reducing_alcohol_harm.aspx [Accessed June 2011].

National Audit Office (2010) *Major trauma care in England*, Feb 2010, [online] Available at: http://www.nao.org.uk/publications/0910/major_trauma_care.aspx [Accessed June 2011].

National Confidential Enquiry into Patient Outcome and Death survey and report (2007) *Trauma: Who Cares?* [online] Available at: http://www.ncepod.org.uk/2007report2/Downloads/SIP_report.pdf [Accessed June 2011].

National Heart Forum (2010) *Obesity Trends for Adults*. [online] Available at: http://www.heartforum.org.uk/resources/nhf-publications/?entryid30=3985 [Accessed June 2011].

Oboh, L. (2006) *Pharmacists can help improve older peoples' medicines management,* The Pharmaceutical Journal, 276, pp 207.

Office for National Statistics (2010a) 2008-based Subnational Population Projections by sex and quinary age; England and Government Office Regions. [online] Available at: www.statistics.gov.uk/snpp [Accessed June 2011].

Office for National Statistics (2010b) *Ageing - Fastest increase in the 'oldest old'*. 24 June. [online] Available at: http://www.statistics.gov.uk/cci/nugget.asp?id=949 [Accessed June 2011].

Royal College of Surgeons of England (2005) *Developing a Modern Surgical Workforce*. [online] Available at: http://www.rcseng.ac.uk/publications/docs/modern_surgical_workforce.html/?searchterm=Developing%20a%20Modern%20Surgical%20Workf orce [Accessed June 2011]. Royal College of Surgeons of England (2010a) *Surgical Workforce 2010*. [online] Available at: http://www.rcseng.ac.uk/publications/docs/surgical-workforce-2010-profile-and-trends [Accessed June 2011].

Royal College of Surgeons of England (2010b) Hospital trauma teams urged to help combat alcohol related injuries and deaths. Press release [online] issued 2nd April 2010. Available at: http://www.rcseng.ac.uk/news/hospital-trauma-teams-urged-to-help-combat-alcohol-related-injuries-and-deaths [Accessed April 2011].



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